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These are but few of the problems before the industrial nurse. In fact I know of no up-to-date or old-world problem that the industrial nurse, as a servant of the public, will not be called upon to face. Her method of meeting these problems must be to treat each individual case as a human being in need of help. She must learn to call in all the aid modern society offers her in its efforts of regeneration. She may make many mistakes, but there need be no absolute failures, for if she can do nothing else, love and sympathy, with a fine understanding of our common brotherhood, go a long way toward alleviating society's wrongs and solving life's weary problems.

This may give the impression that the work of the industrial nurse is made up of hardships and the solving of difficult problems but in meeting the problems of humanity, one comes in contact with human beings who are full of joy as well as sorrow; the nurse makes friendships and sees wonderful dreams come true and often finds her efforts rewarded. The difficult problems will often be easily solved and there is considerable pleasure and joy in solving them. The pleasure one finds in helping these hard-pressed workers to come into their own, well repays one for the effort she has put forth.

THE ADMINISTRATION OF MEDICINES

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Dissociating Power of Various Drugs. The degree with which any drug will dissociate into its ions, even in water, varies with the complexity of its chemical structure. Thus, the rather simply constructed inorganic substances dissociate more rapidly into their ions than the more complex organic substances. For example, magnesium sulphate dissociates more rapidly than phenacetine or any of the other coal tar drugs.

DISSOCIATION AND ABSORPTION

From the foregoing discussion we have seen that medicines, when given in fluids or when dissolved in the gastric or intestinal juices, become dissociated into ions. This fact has important bearings upon the absorption of the remedy and upon its subsequent effects after it enters the blood stream.

(1) Dissociation of a remedy separates it into its ions, which are simpler chemical substances, more readily soluble in the body fluids and much more readily absorbed.

(2) Remedies which exist in the ionic state are capable of producing the maximum amount of chemical action and therefore the greatest pharmacological effect.

(3) Dissociation of a remedy into its ions separates the active from the inactive part.

THE CHOICE OF THE METHOD OF ADMINISTRATION

When giving any remedy by mouth, whether it comes in the form of a fluid, tablet, capsule or pill, the way in which it should be given will depend on whether we desire a general effect or merely a local one on the gastro-intestinal tract.

(1) *To Obtain a General Effect.* For a general effect the following points should be considered.

(a) How soon do we desire the effect?

(b) In what fluid shall we give it?

Both of these questions are dependent on one another.

As a general rule we may say that for a rapid effect a fluid should be given in a large amount of water, as in this fluid a drug will dissociate most rapidly. For a slow, more gradual effect, as in giving potassium iodide, the drug should be given in some fluid such as wine, syrup or milk where very slow dissociation takes place.

Drugs that in themselves are injurious (irritating) to the tissues should be given in a fluid like milk or some other albuminous fluid. The irritating action is usually due to a chemical combination of the drug with albumins of the cells. By giving such a drug in milk it will combine with the albumins of the milk and thereby lessen the irritation when it comes in contact with the tissue cells, since it is already combined with albumins.

(2) *To Obtain Local Effects.* For local effects on the gastro-intestinal tract, absorption and dissociation of the remedy is to be avoided. This can be attained by giving the drug in solid form or in a fluid like acacia where very little dissociation takes place.

TASTE

Taste is a very important factor from the patient's standpoint. Many remedies have a very unpleasant taste which must be disguised or overcome before the patient will take the remedy. A patient may dislike a taste because it is bitter or because it is unpleasant. The bitter taste is often necessary to produce the effect, as in remedies given to increase the appetite.

The bitter taste can often be lessened by giving the remedy in a large quantity of fluid, thus also enhancing the efficiency of the drug. It may also be disguised by giving it in syrup or in wine. Unpleasant tasting remedies can be disguised by giving them in syrup, in wine, or in some special way which will be described under the particular group of drugs.

TIME OF ADMINISTRATION

With most remedies the time of administration is not as important as most patients imagine. However, remedies which increase the secretion of digestive juices or which aid the appetite should be given before meals.

Remedies which are given to neutralize digestive juices when they are present in excess should be given after meals.

Remedies for rapid absorption should better be given after meals, because there is usually more absorption taking place at that time.

Remedies which are irritating to the tissues should be given after meals, as these remedies can then combine readily with the albuminous food which is present in the stomach after meals and thereby lessen the irritation.

OTHER FACTORS INFLUENCING ADMINISTRATION

Pregnancy. In pregnancy potent drugs should be avoided as they may be injurious to the fetus. Drugs which are apt to increase uterine contractions should also be avoided as these may induce abortion.

Lactation. During lactation potent drugs which are apt to affect the child by being excreted in the milk, and those which may lessen the secretion of the milk, are to be avoided.

Administration to Children. Medicines when given to children should preferably be given in fluid form, and unpleasant tasting remedies should be thoroughly disguised. Pills, tablets or capsules are to be avoided in children since they are apt to chew them before swallowing.

The foregoing principles form the basis upon which the method of administration of any remedy should depend. Some of these methods have been used empirically for many years in many institutions. There are, however, certain modifications in the detail of administering many remedies due to individual chemical or physical peculiarities. We shall therefore, consider the administration of various remedies in the following order, which is based upon the simplicity of their chemical structure. We shall consider the simpler chemical substances first as they present fewer problems:

The administration of acids.
The administration of alkalies.
The administration of inorganic salts.
The administration of metals and their compounds.
The administration of alkaloids
The administration of glucosides.
The administration of galenicals.
The administration of hypnotics.
The administration of coal tar products.
The administration of oils.
The administration of hydrocarbons.

THE ADMINISTRATION OF ACIDS

Acids are of two kinds: inorganic and organic. They are usually given to produce one of the following effects:

(1) To increase the amount of acid in the stomach when the hydrochloric acid of the stomach is diminished. The acid will then aid the pepsin in the digestion of the proteid food in the stomach.

(2) To lessen thirst. For this effect the organic acids such as those contained in various fruit juices such as lemonade, grape juice, orange juice, etc., are used.

All the acids in strong solutions are very injurious to the tissues with which they come in contact. The acids should, therefore, be given in very dilute solutions. Acids are also injurious to the teeth since they destroy the enamel.

Since the object of giving dilute acids is to take the place of the absent acid in the stomach, the best way to administer them is to let the patient sip a large quantity of water containing some dilute acid, through a glass tube. In this way the acid is distributed over a large area of the stomach but in small quantities at a time, thus imitating the normal secretion of acid in the stomach. Moreover, the contact of the acid with the teeth is thus avoided.

When pepsin and proteid food are present in the stomach, the acid and the pepsin act on the food and digest it. When, however, there is no food in the stomach the acid becomes dissociated into its ions; that is, into the hydrogen cation and the chlorine or sulphate anion. These ions are then absorbed and the chlorine and the sulphate anions slightly increase the flow of urine as they are excreted through the kidneys.

(*To be continued*)